DOCUMENT RESUME

ED 068 421 SO 004 883

TITLE	Colorado Interim Master Plan for Environmental Education.
INSTITUTION	Center for Research and Education, Estes Park, Colo.
SPONS AGENCY	Office of Education (DHEW), Washington, D.C.
PUB DATE	72
GRANT	OEG-0-71-4579
NOTE	54p.
EDRS PRICE	MF-$0.65 HC-$3.29
DESCRIPTORS	*Demonstration Projects; *Educational Needs; *Educational Planning; *Environmental Education; Environmental Influences; Master Plans
IDENTIFIERS	Colorado; *Needs Assessment

ABSTRACT

The Environmental Education Master Plan cites eleven education needs in Colorado, general goals for meeting these needs, and specific recommendations for achieving these goals. Participants in the planning project represent a broad cross-section of interests, backgrounds, ages and geographic locations. Identification of local, regional and State-wide environmental problems, the role of both formal and informal education in helping to solve these problems, and local and State-wide resources that could be available for environmental education purposes is made in an attempt to provide guidance and coordination for a comprehensive environmental education effort. Appendixes include a Needs Assessment Questionnaire, sent to a selected sample of Colorado citizens, with a statistical analysis of responses given and a statement of goals from the final report of the Colorado Environmental Commission, March 1972. (Author/SHM)

FILMED FROM BEST AVAILABLE COPY

ED 068421

SP 004 883

COLORADO INTERIM MASTER PLAN FOR ENVIRONMENTAL EDUCATION

APRIL, 1972

Prepared by **MASTER ADVISORY PLANNING COUNCIL**

CENTER FOR RESEARCH AND EDUCATION
2150 S. BELLAIRE / DENVER, COLORADO 80222 / (303) 759-9935

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY

August 8, 1972

Dear Friend,

More than 650 Colorado citizens, organized as the Master Advisory Planning Council (MAPC), participated over the past ten months in the development of the enclosed document, the Colorado Interim Master Plan for Environmental Education, under a U. S. Office of Education grant.

Recently USOE renewed the grant for another year to support the second phase of the project -- active use of the Master Plan as the blueprint for environmental education programs throughout the State. More than that, they designated Colorado's Plan as the national demonstration project and awarded us a second grant to provide technical assistance to Colorado programs and to other states in their planning efforts.

The primary focus of the coming months, therefore, will be assisting various groups to develop action plans, based upon the principles and guidelines contained in this document, to meet their own environmental education needs. Specific programs will likely range from teacher training to establishing environmental education centers to setting up speakers' bureaus for community service organizations. A number of Master Planning participants will be attempting to incorporate environmental education into the school accountability process of their local school districts.

It is imperative that a much larger number of Colorado citizens become involved if the measures needed to solve the State's environmental are to be achieved. If currently you are not an active participant in this planning process, but would be willing to devote some time and evergy toward promoting environmental education in Colorado, please give us a call. We would appreciate your comments on the Interim Master Plan and any program ideas that you would like to see developed. Also, you can help "spread the word" by sharing this document with others who are not aware of the planning effort.

We look forward to working with you during the coming year to make environmental education a reality in your community.

Sincerely,

Richard F. Rocchio

Richard F. Rocchio
Project Director
Colorado Environmental Education Master Plan

RER/sp

COLORADO INTERIM MASTER PLAN
FOR
ENVIRONMENTAL EDUCATION

developed under
Grant No. OE-G-0-71-4579
from the
United States Office of Education
Washington, D. C.

Master Advisory Planning Council

April, 1972

coordinated by the

Center for Research & Education
2150 S. Bellaire/Denver, Colorado 80222
(303) 759-0044

A special thanks goes to all of the more than 650 Colorado citizens who have worked with us during the past 10 months not only to develop this document but also to pave the way for the acceptance and implementation of environmental education throughout the state.

- Vincent Cyphers
  Chairman
  Master Advisory Planning Council

- Richard Rocchio
  Director
  Master Plan Staff

cover design by

Miles Foresman
Colorado Game, Fish & Parks Division

printing facilities donated by

Northern Colorado Educational Board of Cooperative Services
1750 30th Street, Suite 48
Boulder, Colorado 80301

printed on recycled paper

MASTER ADVISORY PLANNING COUNCIL
2150 S. Bellaire / Denver, Colorado 80222 / 759-0044

June 12, 1972

Mr. Sidney Marland
Commissioner of Education
U. S. Office of Education
400 Maryland, S. W.
Washington, D.C. 20202

Dear Commissioner Marland:

I am honored to transmit to you the Colorado Interim Master Plan for Environmental Education. It is the result of the efforts of more than 650 Colorado citizens who have joined together to determine what emphasis future environmental education planning in the state should have and to assure that environmental education will ultimately stimulate the public's involvement in environmental decision-making and problem-solving.

The Interim Master Plan cites eleven environmental education needs in Colorado, general goals for meeting these needs, and specific recommendations for achieving the goals.

The Master Advisory Planning Council, formed last year for the first phase of the Master Planning effort, and various state agencies involved in the effort, especially the Colorado Department of Education, are eager to begin the second phase of planning. During this time Colorado citizens will begin to act on the stated recommendations.

This project has been very beneficial for the state, and we appreciate the assistance we have received from your office to make it possible. We ask that you acknowledge this document and the effort it represents and support action to carry out the recommendations cited for meeting Colorado's environmental education needs.

Respectfully,

Vincent Cyphers

Vincent Cyphers, Chairman

cc: Colorado Congressmen

State of Colorado

EXECUTIVE CHAMBERS

DENVER

JOHN A. LOVE
Governor

May 31, 1972

Vincent Cyphers, Chairman
Master Advisory Planning Council
1708 13th Avenue
Greeley, Colorado 80631

Dear Chairman Cyphers:

I have reviewed an advance copy of the Colorado Interim Master Plan for Environmental Education funded through the Office of Environmental Education, U. S. Office of Education, under the Environmental Quality Education Act of 1970.

In view of the fact that a broad base of Colorado citizens have participated in the development of this plan, I feel that this bespeaks the willingness and spirit of the people of Colorado to cooperate with each other in attaining and maintaining a quality environment in which they can live and work.

I understand that the present document represents the efforts of the first phase of planning and that the project will continue in order to facilitate the development of plans which meet the needs of specific groups throughout the state. Congratulations to you on your success to date. I endorse your continued efforts, and I will be following closely your progress during the subsequent planning phase.

Sincerely,

John A. Love
Governor of the State
of Colorado

TABLE OF CONTENTS

		Page
I.	Summary	1
II.	Introduction	6
III.	Colorado Environmental Problems	11
IV.	Colorado Environmental Education Needs	15
V.	Constraints to Solving Colorado's Environmental Problems and Meeting Its Environmental Education Needs	25
VI.	Environmental Education Goals for Colorado	29
VII.	Interim Master Plan Recommendations	30
VIII.	Evaluation	32
IX.	Environmental Education Program Possibilities & Suggestions	34

APPENDIX A - Needs Assessment Questionnaire

APPENDIX B - Goals for Colorado, from COLORADO: Options for the Future, Final Report of the Colorado Environmental Commission, March 1972.

"Taken together, our findings suggest that the ability of the ecology movement for unifying a diverse constituency has perhaps been overrated. At least at this point in time, those persons most concerned about environmental issues appear to reflect the same configuration of social and psychological attributes which have traditionally characterized individuals active in civic, service, and political organizations---e.g., high education and high socioeconomic status (Hausknecht, 1962; Milbrath, 1965). Recent increments in public concern about ecology may merely reflect a more intense commitment by this relatively select group of people rather than broad increases in sensitivity to environmental problems among the general citizenry.

It is not unusual that particular kinds of people are overrepresented in different types of social movements. Yet, the strength of any such movement depends in part upon keeping its issues and proposals within a framework of broadly prevalent human concerns. If the ecology movement is to increase its impact on public policy, it might do well to attend to means of demonstrating to conservatively oriented individuals, to the old, to the poor, and to the less-well-educated that environmental issues are relevant to <u>their</u> lives. Only by sewing together a diverse, pluralistic constituency can environmentalists maximize their impact on America's ecological destiny. The results of this investigation suggest that it would be a mistake to assume that such a constituency already exists."

- Tognacci et al.
"Environmental Quality--How Universal Is Public Concern?"
<u>Environment & Behavior</u>, Vol. 4, Number 1, March 1972.

COLORADO INTERIM MASTER PLAN FOR ENVIRONMENTAL EDUCATION

I. Summary

Under a planning grant from the United States Office of Education, over 650 Colorado citizens have been directly involved over the past nine months in developing an Environmental Education Master Plan which will serve to promote, assist, and coordinate Environmental Education (EE) efforts within the state. The Center for Research & Education (CRE), acting for the Master Advisory Planning Council (MAPC), an environmentally-concerned citizen body established to meet the grant requirements, was recipient of the grant monies and has, with substantial assistance from the Colorado Department of Education, carried out the staff work of the planning process.

Representing a broad cross-section of interests, backgrounds, ages and geographic locations, the Master Planning participants have identified local, regional and state-wide environmental problems, the role of both formal and non-formal education in helping to solve these problems, and local and state-wide resources that could be made available for Environmental Education purposes. These people made their views known primarily through participation in one of ten Interest Committees---Business/Industry, Labor, Education, Environment, Minority, Student/Youth, Media, Professional, Government, Community Service/Urban---established in the Denver metropolitan area or through regional meetings organized in Hugo, Craig, Rifle, Eagle, Cortez, Lamar, Durango, Alamosa, Colorado Springs, Meeker, Sterling, Pueblo, Hot Sulphur Springs, Fort Collins, and Montrose by representatives of the Soil Conservation Service. These Interest Committees and Regional Groups are two major components of the Master Advisory Planning Council. A Steering Committee, composed of the chairman of each Interest Committee and two individuals, one from the Soil Conservation Service and one from the Boards of Cooperative Educational Services who serve as spokesmen for the regional participants, meets regularly to make final decisions for the Planning Council.

Future Master Planning activities will focus primarily on assisting the various planning groups to develop plans for their own Environmental

Education programs, based upon the principles and guidelines contained in this document, to meet the Environmental Education needs that they have identified. Funding to carry out these activities is being sought from the U. S. Office of Education as a continuation of the current planning grant. With this in mind, the enclosed document is considered as Colorado's Interim Master Plan for Environmental Education. The data and learning that is generated as a result of the continuing planning effort will be incorporated into a subsequent document.

The following needs, goals and recommendations are based upon the data and information gathered from the planning activities to date:

Needs

The Environmental Education Needs section should be regarded as the most important part of this Interim Master Plan in that it sets forth what Colorado citizens think must be done if Environmental Education is to make a difference in the state. The next publication of the Plan will attempt, as this Interim Plan has not, to assign specific individual, group and agency roles and responsibilities for meeting the Environmental Education needs that are identified.

The following Environmental Education needs have been identified for the state:

- Understanding and acceptance of Environmental Education as a dynamic process which involves individuals in decision making about their own education and which leads them to take personal actions to solve environmental problems.

- Participative planning as the first step in carrying out Environmental Education programs and activities.

- Convincing those groups and individuals who have influence with particular constituencies of the need for EE.

- Financial support for implementing Environmental Education programs and activities.

- Improved communication, cooperation, and coordination among the various private and public entities within the state working in Environmental Education.

- Availability of and easy access to accurate environmental information that presents all sides of environmental issues.

- Wider, more effective utilization of the mass media (television, radio, newspapers, etc.) in Environmental Education efforts.

- Training in both content and methodology for those engaged in planning, implementing, and evaluating Environmental Education efforts in both the formal and non-formal educational spheres.

- Mechanisms designed to enable the assignment and assumption of specific organizational roles and responsibilities for promoting, assisting, and carrying out Environmental Education programs and activities within the state.

- Evaluation of all Environmental Education efforts undertaken in Colorado in order to make them accountable to their sponsors, participants, and the general public.

- A comprehensive statement of overall Environmental Education goals for the state.

Goals

The following Environmental Education goals have been recommended in order to meet the above needs:

- Program Goals
  The Environmental Education effort in Colorado should:

  1. collect and make available accurate information that presents all sides of environmental issues;

  2. develop and make available learning experiences which employ direct involvement of the individual in activities aimed at studying the nature of and assisting in solving environmental problems; and

  3. furnish information about activities which people can undertake to involve themselves in improving environmental conditions.

- Learner Goals
  Individuals should demonstrate:

  1. a knowledge and understanding of ecological principles, and

  2. a change in their attitudes and values about the environment through personal commitments to life-styles which are conducive to maintaining a quality environment.

Recommendations

The following recommendations have been made in order to achieve the goals and, thereby, meet Colorado Environmental Education needs. It is recommended that:

- Environmental Education in Colorado be that education which:

    1. studies the interdependencies between man and other living and non-living elements of his environment;

    2. promotes an understanding of the capability of individuals to significantly alter their life-support system, both positively and negatively, and therefore illustrates the need for them to assimilate values and attitudes that are conducive to the maintenance of a quality environment;

    3. emphasizes that there are no simple solutions to complex environmental problems, that trade-offs are involved in all decisions, and that the socio-economic effects of all corrective actions must be properly accounted for before such actions are taken;

    4. makes accurate environmental information that presents all sides of environmental issues available to individuals so that they can rationally decide for themselves their own positions;

    5. teaches the skills needed to properly identify environmental problems and to intelligently work toward their solutions;

    6. provides real-life learning experiences for the individual in a variety of learning environments other than lectures;

    7. is part of all academic disciplines rather than a course in itself; and

    8. furnishes information about activities through which individuals can become personally involved in improving environmental conditions.

- The Master Advisory Planning Council (MAPC) endeavor to promote, assist and coordinate the planning for formal and non-formal Environmental Education activities throughout the state.

- The Interest Committees and Regional Groups of the Master Advisory Planning Council plan and begin to implement their own Environmental Education programs, based upon their particular needs and available resources.

- Planning be done to determine how to more extensively and more effectively utilize television, radio and local newspapers in environmental awareness and education.

- Planning be done to establish a central source(s) for the collection and dissemination of environmental information, educational materials and other supportive services.

- Environmental organizations and all private and public entities working in the field of environmental protection and Environmental Education make a concerted effort to overcome the lack of involvement and support of particular social and geographic groups and/or the general public in their efforts.

- Environmental Education training workshops be planned and implemented for personnel of environmental groups, media groups, the formal school system and others interested in sponsoring and/or directing Environmental Education programs.

- Means be planned to involve legislators, county commissioners, city councils, school and university administrators and advisory bodies and other public decision makers in Environmental Education activities.

- In support of the fourth recommendation of the Colorado Environmental Commission Report, a major effort be made to encourage passage of legislation with sufficient appropriations to the Colorado Department of Education for promoting and supporting Environmental Education in the state's elementary and secondary schools.

- Every school district and institution of higher learning in Colorado take steps to determine and act on changes that are needed in curriculum, administration, etc. so that they can more effectively meet their obligation in promoting Environmental Education.

- Research and testing be conducted on methods of implementation and evaluation which attempt to change attitudes and values.

II. Introduction

WHY A MASTER PLAN FOR ENVIRONMENTAL EDUCATION

Indications of more public involvement in the environmental movement is evidenced by the more frequent appearance of environmental issues and activities in the news media. Nevertheless, the majority of Coloradoans still do not sufficiently realize the threat that environmental problems pose to the quality of life for everyone living in the state. Many, in fact, discount the environmental movement as being just another fad and view its proponents at best, as naive idealists and at worst, as emotionally-charged radicals and "nuts."

Nevertheless, concern over environmental problems, ranging from urban blight to the economic decline of rural Colorado, is being expressed by a growing number of citizens. Along with this interest is an increasing demand for credible information on environmental issues upon which the concerned individual can base his own personal commitment "to do something" to help the cause.

Too often, however, such a person is faced with a barrage of misinformation and one-sided viewpoints and becomes confused and frustrated in his attempts to secure the information needed to make rational decisions. Often the individual concludes that there is little he can do and either postpones or relinquishes any thoughts of taking personal action.

Due to limited resources, environmentally-related organizations are hampered in providing, both for schools and the general public, information and programs which facilitate intelligent personal decision making concerning environmental problems.

In short, the potential of Environmental Education (EE) for 1) channeling the efforts of environmentally-concerned citizens toward constructive actions and 2) motivating the interest and concern of others not yet committed is not yet being realized. Need clearly exists for a comprehensive state-wide educational effort addressed to the broad range of environmental interests and needs around the state. Only in this way will Environmental Education gain the broad, grass-roots support and visibility needed to raise

its stature among the decision makers who can insure its support and future financial backing.

The Environmental Education Master Planning effort for Colorado is an attempt to provide the guidance, support and coordination for such a statewide comprehensive educational effort. The participative planning approach utilized in this effort has not only produced this document,which represents the thinking of a broad cross-section of people, but has also created a climate for involvement, learning and communication among various entities which will give the document the necessary impetus to become a reality.

THE PLANNING PROCESS

A participatory planning process was utilized in the development of this plan under the assumption that those actively involved in the planning of Environmental Education would be most likely to participate in the implementation of specific programs and activities resulting from such planning. The strength of the plan lies not so much in its content, for it has no power beyond that of suggestion, but in the 650 people whom it directly represents. Through group identification of local environmental problems and Environmental Education needs, discussion of what education must do to meet these problems and needs, and the identification of local human and material resources that could be used in Environmental Education programs, the various participant groups not only provided the information necessary to compile this document, but more importantly, established a mechanism and set the groundwork for planning their own Environmental Education efforts.

HOW THE MASTER PLAN IS TO BE USED

Following are a few of the ways in which the Master Plan document will hopefully be utilized:

- As a means to alert more Coloradoans to the need for Environmental Education in the state and as a guideline to facilitate their involvement in Environmental Education planning and implementation.

- As a description of what Environmental Education is and the goals and principles that Environmental Education programs in Colorado should attempt to incorporate.

- As model and impetus to the Master Advisory Planning Council, its Interest Committees and Regional Groups, and to others for planning and carrying out their own Environmental Education programs and activities.

- As a means to maximize the educational effectiveness of limited human and material Environmental Educational resources.

- To elicit support for Environmental Education from legislators, public officials, school boards, regents and other public decision makers.

- To promote interaction and cooperation among the various individuals, groups, organizations, and agencies now working in Colorado in the many aspects of environmental protection and Environmental Education.

- As a vehicle to publicize the Master Plan recommendations.

- To assist the U. S. Office of Education in funding future Environmental Education projects in Colorado under the Environmental Education Act and to serve as a rationale for Environmental Education funding from all other potential public and private sources.

- As a planning model for other states developing Environmental Education Master Plans and as a means to initiate inter-state sharing of Environmental Education information and ideas.

WHY THIS IS AN INTERIM MASTER PLAN

1. A much larger number of Colorado citizens must become involved in Environmental Education planning and implementation if the corrective measures needed to solve the state's environmental problems are to be undertaken.

2. Now that a variety of Environmental Education Interest Committees and Regional Groups have been organized and a planning momentum established, it is imperative that these groups begin planning specific Environmental Education programs and activities to meet the needs of their respective constituencies. Continued Master Planning will serve to encourage and coordinate these activities; provide the informational and technical back-up required; make possible the use of consultants and Environmental Education experts where needed; set up workshops, meetings, conferences, etc.; and provide whatever other supportive services are necessary.

3. Certain areas in this document require further elaboration and specificity for the Plan to achieve maximum impact and effectiveness. Perhaps the most important of these is the area of organizational roles and responsibilities (described in the Environmental Education Needs Section), which is crucial to the establishment of a coordinated state-wide Environmental Education movement. Through a continuation of the planning process, groups, organizations and agencies working in Environmental Education will be encouraged to assume particular roles and responsibilities to carry out Master Plan recommendations and to promote Environmental Education throughout the state.

THE FUTURE

If a continuation of the current Master Planning effort is granted, there are seven principal areas of activity which will be pursued. These are as follows:

1. Development of Environmental Education (EE) Action Plans

   The various Interest Committees and Regional Groups will be encouraged and assisted in planning and carrying out their own Environmental Education (hereafter referred to in this document as EE) programs and activities.

2. Use of and Continuous Up-Dating of the Master Planning Document

   The Interim Master Planning document will serve as a valuable point of reference for the Interest Committees and Regional Groups as they develop their respective EE programs. Also, as new information is derived from the overall planning process, the existing document will be revised and up-dated to keep it relevant.

3. Strengthening the Master Advisory Planning Council

   If the Master Advisory Planning Council is to promote EE planning in the state, it must define its goals and objectives, assign itself specific responsibilities, and become, generally speaking, a much stronger, more unified body.

4. Better Environmental Communications, Cooperation & Coordination

   The Master Planning process, through the active involvement of such a broad range of interest and concerns across the state, is a logical mechanism to promote better communications, cooperation, and coordination among the many individuals, groups, and agencies concerned about and/or engaged in EE efforts.

5. Improved Understanding and Acceptance of EE

   By encouraging and assisting more people in planning and implementing their own EE activities, they will gain a better understanding of the potential and need for EE efforts on a state-wide basis.

6. Involvement of a Wider Cross-Section of the Colorado Population in EE Activities

   Much more work needs to be done to make EE relevant to the needs of labor groups, minorities, and others whose participation in the Master Planning effort has so far been minimal.

7. Communicating with Other EE State Planning Projects

   Various other states are currently or will soon be developing their own state-wide EE Master Plans. One provision of the proposed planning continuation is to bring key Master Planning personnel from these states to a workshop in Colorado to mutually share ideas, approaches, problems, etc. and to establish a mechanism for interstate communication and cooperation.

III. Colorado Environmental Problems*

ENVIRONMENTAL PROBLEMS REFERRED TO BY BOTH RURAL & URBAN RESIDENTS

Land-use planning, water utilization, and economic stagnation were viewed by most rural Master Planning participants as their most serious environmental problems. Air pollution and population pressures on the Front Range were, in the minds of most urban planning participants, the two principal threats to environmental quality. In spite of their different perspectives, many environmental problems were referred to by both groups. Following is a list of common problem areas:

- Water Problems
  - Inadequate sewage treatment
  - Garbage and litter in waterways
  - Little water-use planning
- Land Problems
  - Inadequate zoning and land-use planning
  - Solid waste disposal
  - Litter and visual blight
  - General depletion of natural resources
  - Oil shale development
- Air Problems
  - Industrial and power plant emissions
  - Odors (feedlots, rendering plants, smog, etc.)
  - Automotive and truck emissions
- Environmental and Economic Impact of the Olympic Games
- Health Hazards of Air and Water Pollution, Radiation, Pesticides, Noise, Etc.
- Materialistic Life-Styles

---

*Based upon data gathered in over 40 meetings with rural (from Lamar to Craig and Durango to Sterling) and urban (suburban to core city minority residents) Master Planning participants, upon the Colorado Environmental Commission's Final Report, "COLORADO: Options for the Future," March, 1972 and upon the Second Interim Report of the Colorado Environmental Commission, November, 1971.

ENVIRONMENTAL PROBLEMS REFERRED TO PRIMARILY BY RURAL RESIDENTS

The following environmental problems were cited almost exclusively by rural planning participants.

- Water Problems
  - Transmountain, transbasin diversion and downstream commitment
  - Salinization as a result of irrigation
  - Feedlot and fertilizer run-off
  - Acid from mine drainage
  - Sedimentation
  - Surface and ground water contamination
  - Over-appropriation of water sources
- Land Problems
  - Restrictions on economic utilization
  - Mining operations
  - Erosion, blowing of topsoil
- Economic Problems
  - Lack of rural job opportunities
  - Discriminatory freight rates
  - Lack of adequate housing
  - Increasing costs of farming and ranching
  - Inadequate return on farming and ranching investment
  - Low taxation bases and property taxes as the major source of economic revenue
  - Need for highway construction and improvement and for Front Range access
  - Predator control
  - Agricultural marketing
- Human Problems
  - Loss of young people to urban areas
  - Lack of rural-urban cooperation and dialogue
  - Loss of rural political strength
  - Lack of leadership in the various environmental problem areas

ENVIRONMENTAL PROBLEMS REFERRED TO PRIMARILY BY URBAN RESIDENTS

The following environmental problems were cited almost exclusively by urban planning participants.

- o Water Problems
  - Industrial and factory effluent
  - Sale of water by Denver to suburban areas
- o Land Problems
  - Need for parks and open spaces
- o Air Problems
  - Vehicular emissions
- o Transportation
  - Vehicle congestion
  - Proposed parking garages
  - Lack of adequate mass transit system
  - Highway construction
- o Over-Population of the Front Range
- o Low Income and Minority Housing, Jobs and Health, and the Loss of Cultural Identity
- o Work Environment of Laborers and Factory Employees

ENVIRONMENTAL PROBLEMS NOT WIDELY DISCUSSED

The following environmental problems were cited only occasionally in meetings with rural and urban planning participants.

- o Environment as a World-Wide Crisis
  - Global implication of over-population
  - The U.S., with 6% of the world's population, consumes 1/3 to 1/2 the annual world output of non-renewable natural resources
  - Ocean dumping
- o Economic Impact of Urban Environmental Problems and the High Cost of Control
- o Lack of Sufficient Concern and Efforts to Find Substitutes for Non-Renewable Energy Resources

- Food Preservatives and Chemicals
- Multiple-Use Concept (Public Land vs. Private Land)
- Administrative Disposition and Use of Public Lands
- Loss of Land to Urbanization and Other Non-Agricultural Uses
- Uncontrolled Dispersal of Population in Rural Areas
- Esthetically and Functionally Poor Architectural Design
- Inadequate and Shoddy Building Construction
- Imminent Fire Hazards and Sewage Disposal Problems Resulting from Lack of Planning and Zoning in Subdivisions and in Mountain Areas of the Front Range
- Flood Control
- Endangered Animal Species
- Loss of Wildlife Habitat
- Loss of Fishery Resources, Water-Oriented Recreation (Swimming, Boating)

IV. Colorado Environmental Education Needs

MASTER PLANNING PROCESS IDENTIFIES COLORADO'S EE NEEDS

The following eleven areas of environmental education needs for Colorado were determined from the information and data gathered during Interest Committee and Regional Group workshops, from individual consultations and from other planning activities.

NEED: Understanding and acceptance of EE as a dynamic process which involves individuals in decision-making about their education and which prepares them to take corrective actions to solve environmental problems.

SO THAT:

- Individuals are made aware of the impact of their own actions upon the environment and thus become environmentally-conscious in their decision-making;
- EE is seen as a dynamic learner-centered alternative to traditional lecture-oriented education by the many educators seeking changes in the current system;
- Personal attitudes and behaviors become based upon an environmental ethic;
- Individual's active involvement in environmental protection will be stimulated and maintained;
- Individuals' education will become flexible and relevant to their personal needs, desires and circumstances.

BY:

- Determining how EE philosophy and process can be integrated into the present formal and non-formal systems of education;
- Incorporating the EE principles listed in Section VII into all EE programs;
- Including representatives of the target groups in determining the content and process of all EE programs and activities;
- Overcoming relevant constraints described in Section V.

NEED: Adequate planning as the first step in carrying out the Master Plan recommendations and all EE efforts.

IN ORDER TO:

- o Assess community or group needs and/or environmental problems to be addressed;
- o Determine the nature and scope of the target populations;
- o Involve people from the sponsoring group or agency, members of the target groups, local resource people, and other community members in the EE effort;
- o Establish relevant goals and objectives for both the learners and for the sponsoring agency;
- o Select the appropriate activities, strategies, and resources to achieve program objectives;
- o Become aware of the activities of other groups engaged in similar EE efforts;
- o Determine how to balance the prospective EE effort with the system or environment in which it is to operate;
- o Fully utilize existing human and material resources, thereby decreasing the need for outside assistance;
- o Correctly prepare applications for outside financial or resource assistance if required.

BY:

- o Following accepted planning procedures which begin with needs assessment and problem identification and conclude with evaluation and feedback of results;
- o Analyzing the total system or environment within which the EE effort will be conducted and then fitting the EE effort into that system or working to change the system so that it is capable of supporting the activity;
- o Determining, in advance, the procedures and/or requirements for assistance set forth by potential funding sources or resource consultants.

NEED: To convince influential groups and individuals of the need for EE. Such groups would include public opinion/financial leaders, media, government officials and legislators, associations of professionals and tradesmen (AMA, Bar Association, Trade Unions, etc.) and foundations.

IN ORDER TO:

- o Gain their support of and involvement in particular EE programs and activities directed toward themselves, their constituencies, or the general public;
- o Gain their assistance in disseminating environmental information;
- o Influence them to include environmental considerations in their decision-making;
- o Gain their support in securing financial assistance for EE;
- o Enlist their support in overcoming the constraints described in Section V.

BY:

- o Enlisting their involvement in the EE planning process;
- o Devising ways to favorably influence their thinking about EE;
- o Developing, with them, programs to meet their own EE needs.

NEED: Financial support for planning and implementing EE programs and activities.

IN ORDER TO:

- o Pay the administrative and support costs to make such programs possible;
- o Support the development of curricula, conferences, workshops, etc.;
- o Develop better methods of conducting EE activities and measuring program results;
- o Support the training of people involved in planning, implementing and measuring results of EE activities and/or materials.

BY:

- o Convincing those who have the available means, e.g., legislators, businesses, agencies, foundations, etc., of the need to fund EE programs;

- o Making the general public aware of the need for EE so that they will request and support its inclusion in school curricula and work for its incorporation into non-formal educational endeavors;

- o Assessing the feasibility of existing groups and agencies for directing some of their resources to EE purposes.

NEED: To improve communication, cooperation and coordination among the various private and public entities working in EE in Colorado.

IN ORDER TO:

- o Eliminate unnecessary duplication of effort;

- o Coordinate EE planning and implementation with other related activities, e.g., state-wide Comprehensive Health Planning, Resource Conservation & Development projects, Bureau of Land Management activities, etc.

- o More efficiently inform people how to make use of available EE information, resources, materials, etc. and to maximize the use of limited EE resources and professional expertise;

- o Provide a unified EE campaign, thereby improving the chances for gaining public support;

- o Promote objectivity through the inclusion of groups representing a wide range of viewpoints;

- o Better promote and assist in the development of a variety of specific action plans to meet the expressed EE needs of all segments of the Colorado citizenry.

BY:

- o Expanding the distribution, coverage and frequency of newsletters, resource guides, etc.

- o Facilitating more communication and interaction among groups and individuals who are, or should be, involved in EE efforts;

- o Broadly disseminating information about state-wide and national EE programs;

- o Maintaining the involvement of those who have participated in the Master Planning effort to date and eliciting the participation of new people and groups;

- o Working to determine roles and responsibilities for individuals, groups, organizations, and agencies engaged in EE efforts;

- o MAPC, its Steering Committee, Interest and Regional Groups taking an active role in promoting and coordinating EE activities in the state.

NEED: Availability of information that deals with:

1. Accurate environmental data which presents all sides of particular environmental issues, such as:

   a. the broad range of environmental problems, as well as the various viewpoints different people have toward them;

   b. the economic, political and social impact of environmental problems as well as of potential solutions;

   c. existent and proposed environmental legislation;

   d. future environmental conditions and possible alternative societal and individual life-styles.

2. Environmental and ecological concepts and principles which are concise and easily understood by the general public.

3. EE resources (reference and curriculum materials, consultants, speakers, organizations, etc.) for all types of audiences.

4. The nature and scope of the activities of persons, groups and agencies working on environmental problems.

5. EE programs now in existence or planned, including workshops and training programs, in both the formal and non-formal education spheres.

IN ORDER TO:

- Make people aware of the complexity, scope, and short and long-term consequences of environmental problems and proposed solutions;

- Assist groups and individuals to make decisions which are more environmentally sound;

- Overcome public skepticism about the validity and credibility of environmental information and its sources;

- Enable groups and individuals interested in educating themselves or others to make optimum use of information, resources, training programs, etc. available;

- Provide a means through which individuals, groups and agencies can become more informed about what others are doing, thereby avoiding unnecessary duplication of effort and providing a basis upon which to expand and improve their own efforts;

- Overcome the relevant constraints, e.g., limited financial support for EE.

BY:

- Providing opportunities for people to learn about various sources of information and how to use them;
- Planning and implementing means for existing libraries, resource centers, groups, agencies, etc. to improve their accessibility and to expand their dissemination activities;
- Bringing together people who have different feelings about environmental problems to mutually share concerns and viewpoints;
- Launching school and community EE efforts which, among other activities, would systematically collect local environmental information and continuously monitor local environmental conditions;
- Making available environmental information pertaining to special areas of interest such as law, medicine, architecture, agriculture, planning, education, etc.;
- Continuously evaluating and disseminating information about on-going EE efforts;
- Involving a broader cross-section of the state's population in the activities of Denver-based environmental groups;
- Preparing and continuously up-dating catalogues and guides listing sources of environmental and educational information, resources and consultants;
- Interested groups and organizations studying the possibilities of establishing:
    1. environmental information clearing houses, especially at the local level;
    2. locally-based environmental organizations which are broadly representative of all the community's citizens; and
    3. city or county Human Resource Centers which would compile information about community members willing to contribute their time and talent for community projects.

NEED: The coordinated participation of mass media (television, radio, newspapers, etc.) in EE programming which seeks the active involvement of the audience.

IN ORDER TO:

- Utilize its potential as the primary means of education for a broad range of people;

- o Make information on environmental problems, programs and planning readily accessible to a large number of people of varied interests;

- o Stimulate and maintain audience interest, concern and response;

- o Provide a public forum for inter-group communication and discussion of environmental issues.

BY:

- o Convincing media personnel of the potential and responsibility of mass media in carrying out EE;

- o Training communications personnel in the design and presentation of EE;

- o Integrating EE media programming, e.g., closed circuit, video tape, films, etc. into the existing formal school system as well as non-formal settings;

- o Initiating feasibility studies of the following activities:

  1. a state-wide environmental news service

  2. the assignment of an environmental contact person by each media station or unit to coordinate all information and feedback pertaining to environmental matters.

NEED: To provide training in both content and methodology for personnel of formal school systems, (administrators as well as teachers), environmental organizations, media organizations, and others engaged in planning, implementing and evaluating EE efforts.

IN ORDER TO:

- o Meet the EE needs expressed in this section according to the principles described in Section VII;

- o Make people in formal education (including medical and law schools, etc.) aware that through the process of EE, education itself can be made more dynamic and relevant to the needs of students and to today's problems;

- o Provide a cadre of trained people who themselves can conduct and/or serve as resource personnel in future EE workshops;

- o Prepare them with the skills needed to facilitate learners' understanding of and concern for the environment.

BY: o Utilizing the human and material resources of professional and environmental groups, governmental agencies, etc.

o Gaining assistance from those already trained in EE or who are currently conducting EE activities;

o Taking advantage of public school, community college, college and university faculties throughout the state;

o Overcoming relevant constraints described in Section V.

NEED: Mechanisms designed to encourage and assist the various individuals, groups, organizations and agencies involved in environmental protection and EE to assume specific roles and responsibilities as part of the state-wide effort to promote and coordinate EE endeavors.

IN ORDER TO:

o Carry out EE programs and activities throughout the state;

o Promote the design and development of EE programs, methods and materials to be used by others actually in charge of implementing EE programs and activities;

o Assist in the development of program evaluation methods and procedures;

o Comprehensively assess what information, material, support, money, facilities, consulting services, etc. are available for EE efforts.

BY: o The Master Advisory Planning Council assuming more fully its role in:

1. being a catalyst for EE in Colorado;

2. facilitating the coordination, cooperation and communication among individuals, groups, organizations and agencies within Colorado who are working in the field of EE;

3. Assisting and supporting groups and organizations interested in conducting EE programs.

o The Colorado Department of Education, in light of more intensive demands for EE, expanding its role in providing EE leadership to formal education through:

1. strengthening its own internal EE resources and capabilities;

2. providing guidance to efforts of local school districts, especially in conjunction with the School Improvement Process

as it relates to the Accountability and Comprehensive Education Planning Acts of 1971;

3. providing leadership to the cooperative efforts of the Colorado Commission on Higher Education, the Colorado State Board for Community Colleges and Occupational Training, the Boards of Cooperative Educational Services, the State Board of Agriculture, the Board of Trustees for State Colleges, the Colorado University Board of Regents, and the Education Interest Committee of the Master Advisory Planning Council.

- o Other environmentally-involved individuals, groups, organizations, and agencies working with the Master Advisory Planning Council to determine the particular roles and responsibilities they might assume in implementing and/or supporting EE in Colorado.

NEED: To continually evaluate the operations and outcomes of all EE efforts undertaken in Colorado so that they are accountable to the sponsors, participants and the general public.

IN ORDER TO:

- o Meet growing public expectations that they be made aware of the results of educational efforts undertaken in their behalf;
- o Provide objective data and information upon which suggestions for improvement can be based;
- o Provide a basis for reporting results to funding sources and for justification in seeking additional funding;
- o Provide information to others who wish to undertake similar EE efforts;
- o Insure that the relatively limited resources available for EE efforts, particularly people's time, are being effectively utilized in program implementation.

BY:

- o Setting goals and objectives for EE efforts and measuring the degree to which each program and its participants achieve the stated goals and objectives;
- o Reporting evaluation results to program participants, sponsors, and any interested individual or organization;
- o Publishing state-wide profiles of EE programs.

NEED: To further develop and make more comprehensive the state-wide EE goals advocated in this Interim Plan (Section VI).

IN ORDER TO:

- Set the basis for a coordinated, unified and accountable EE movement within the state;
- Reflect new EE needs that will be determined in the future;
- Serve as a common point of reference and guidance for EE programs and activities conducted throughout the state;
- Coordinate state-wide EE goals with the specific goals set for each EE program and activity;
- Identify Colorado's particular focus in EE as compared to that of other states.

BY:

- Transforming newly-discovered EE needs into specific goals and objectives;
- Establishing goals and objectives for each EE effort which reflect the state-wide goals but are also tailored to the unique social, cultural, economic and geographic circumstances of the group toward whom the program is directed.

V. Constraints to Solving Environmental Problems and Meeting EE Needs

MANY VARIABLES INFLUENCE ONE'S PERCEPTIONS OF ENVIRONMENT

Dependent upon their socio-economic conditions, geographic locations, and individual perceptions, people often view environmental problems and "environmentalists" in different and opposing ways. For example:

- For many people, the prospect of more cars in downtown Denver brings to mind more congestion and air pollution, while others see an economic boost resulting from more shoppers.
- Rural inhabitants are faced with "out-migration" and economic stagnation, while many conservationists seek more land for wilderness areas and less money for highway development.
- Most minority people believe that the attention and money being given to the "environmental cause" is a cop-out on more fundamental and serious social issues.
- Concern for the "Great Outdoors" is seen by many as a secondary environmental issue to the question of how to make our cities more liveable.
- "Environmentalists" are sometimes viewed as either radicals or naive idealists because of their over-emotionalism and sometimes lack of knowledge and/or concern about the social and economic consequences of measures they advocate.
- Many people feel that "environmentalists" are trying to hold lands for the few and cut off access to the many.
- "Environmentalists" often feel that they are misrepresented and that their concerns are unfairly and unintelligently dismissed or ignored.
- Some people view "environmentalists'" advocacy of cooperation and their proposed life-styles as threatening the basic competitive spirit and consumer orientation underlying the "American way of life."

BETTER USE OF HUMAN RESOURCES IN EE PROGRAMS NEEDED

Individual expertise and talent, the most important dimensions of any EE program, are often poorly utilized or not used at all.

- EE has a potential for controversy which may prevent its inclusion in school curricula because it requires changes in traditional education methods and, in fact, in many of our present behavioral patterns.

- Because a general attitude exists that only "credentialled" EE experts and professionals can effectively serve as EE resources, the involvement of other valuable human resources is precluded.

- There is little knowledge of what EE really is and what it can do; consequently, there is a lack of leadership for getting it moving.

- Those in charge of EE programs are often unaware of people, organizations and materials which can assist them in their efforts.

- Some experts are too narrowly focused on their own areas of expertise and/or are unable to communicate at the layman's level of understanding.

- Many existing human resources are overlooked because of the emphasis people place on the need for money to conduct EE programs.

- There are too few people in the formal and non-formal education spheres who are sufficiently knowledgeable about the environmental crisis.

- EE does not have the status of traditional subjects in education curricula, partly because it is not a single, easily identified discipline.

- Environmental organizations have a great amount of talent and expertise among their memberships, but jobs and other commitments make tapping these resources difficult.

A LACK OF ADEQUATE UNDERSTANDING AND CONCERN ABOUT THE ENVIRONMENT

The low level of public concern results from many factors, such as lack of knowledge, feelings of hopelessness, and self-interest.

- Many view the environmental movement as a fad and are convinced that whatever environmental problems exist will be solved ultimately by American "know-how" and technology.

- Many people profess to be in favor of the environmental movement and EE, but are unwilling to give their time and effort to work on the problems.

- "Environmentalists" often fail to consider the self-interest of others in advocating particular solutions to environmental problems.

- Many people refuse to consider and/or accept the societal transformations, inconveniences and economic costs that are needed to solve our environmental problems.

- Some people feel that the environmental situation is overwhelming and thus refuse to become deeply involved in it.

- The formal education system has so far failed to provide a forum for the discussion, analysis, understanding of and involvement in the environmental situation.

- People are "turned-off" due to the profusion of conflicting information and lack of apparently rational alternatives.

USEFUL EE MATERIALS ARE HARD TO FIND

There are too few educational materials which are comprehensive and support real EE, and the problem is compounded by the inability of education to keep pace with the informational explosion.

- There are almost no EE materials and media which incorporate methods for involving individuals with their environment and/or which involve more than the mere dissemination of information.

- It is a difficult chore for educators and others to choose something relevant and of good quality from the vast amount of material on the market since environment has become an "in" topic.

- As yet, there are few educational materials which delve into the root causes of our environmental problems and which treat the environment as an all-encompassing concept.

- Too much informational material is subjective and biased, presenting only one side of the question.

- Many EE materials are not attractive to school districts because of prohibitive costs and lack of focus on local environmental conditions.

MINIMAL OUTSIDE FUNDING FOR EE ENDEAVORS

Those interested in conducting EE programs must generally look to existing human and material resources for support because outside funding is likely to remain relatively minimal for the forseeable future.

- There is not yet sufficient public demand for EE because of the low level of understanding of its true scope and potential.
- There is relatively little federal funding and no Colorado state funding for EE due to the multiplicity of economic, social and other educational needs which are felt to be more important.
- The public debate over the financing and accountability of education may result in a reluctance on the part of state and local governments to spend money on new educational endeavors.

VI. Environmental Education Goals for Colorado

CITIZENS, THROUGH MASTER PLANNING PROCESS, SET EE GOALS FOR COLORADO

Based upon results from the Needs Assessment Questionnaire (see Appendix A), the 350 respondents indicated that approximately equal emphasis should be given to formal and non-formal EE endeavors. Following are the goals that all EE programs in Colorado, both formal and non-formal, should seek to achieve:

- Program Goals

  The EE effort in Colorado should:

  1. collect and make available accurate information that presents all sides of environmental issues;
  2. develop and make available learning experiences which employ direct involvement of the individual in activities aimed at studying the nature of and assisting in solving environmental problems; and
  3. furnish information about activities which people can undertake to involve themselves in improving environmental conditions.

- Learner Goals

  Individuals should demonstrate:

  1. a knowledge and understanding of ecological principles, and
  2. a change in their attitudes and values about the environment through personal commitments to life-styles which are conducive to maintaining a quality environment.

VII. Interim Master Plan Recommendations

RECOMMENDATIONS BASED ON NEEDS, CONSTRAINTS & GOALS

Based upon Colorado's EE Needs (Section IV), Constraints (Section V), Goals (Section VI) and the Needs Assessment Questionnaire (Appendix A), the following activities are proposed as the Interim Master Plan Recommendations.

- Environmental Education in Colorado be education which:

    1. studies the interdependencies between man and other living and non-living elements of his environment;

    2. promotes an understanding of the capability of individuals to significantly alter their life-support system, both positively and negatively, and therefore illustrates the need for them to assimilate values and attitudes that are conducive to the maintenance of a quality environment;

    3. emphasizes that there are no simple solutions to complex environmental problems, that trade-offs are involved in all decisions, and that the socio-economic effects of all corrective actions must be properly accounted for before such actions are taken;

    4. makes accurate environmental information,that presents all sides of environmental issues, available to individuals so that they can rationally decide for themselves their own positions;

    5. teaches the skills needed to properly identify environmental problems and to intelligently work toward their solutions;

    6. provides real-life learning experiences for the individual in a variety of learning environments other than lectures;

    7. is part of all academic disciplines rather than a course in itself; and

    8. furnishes information about activities through which individuals can become personally involved in improving environmental conditions.

- The Master Advisory Planning Council (MAPC) endeavor to promote, assist and coordinate the planning for formal and non-formal EE activities throughout the state of Colorado.

- The Interest Committees and Regional Groups of the Master Advisory Planning Council plan and implement their own EE programs, based upon the needs and resources they have identified over the past months of the Master Planning effort.

- Planning be done to determine how to more extensively and more effectively utilize TV, radio and local newspapers in environmental awareness and education.

- Planning be done to establish a central source(s) for the collection and dissemination of environmental information, educational materials and other supportive services.

- Environmental organizations and all private and public entities working in the field of environmental protection and EE make a concerted effort to overcome the lack of involvement of particular social and geographic groups and/or the general public in their efforts.

- EE training workshops be planned and implemented for personnel of environmental groups, the communication media, the formal school system and others interested in sponsoring and/or directing EE programs.

- Means be planned to involve legislators, county commissioners, city councils, school and university administrators and advisory bodies and other public decision-makers in Environmental Education activities.

- In support of the fourth recommendation of the Colorado Environmental Commission Report*, a major effort be made to encourage passage of legislation with sufficient appropriations to the Colorado Department of Education for promoting and supporting EE in the state's elementary and secondary schools.

- Every school district and institution of higher learning in Colorado take steps to determine and act on changes that are needed in curriculum, administration, etc. so that they can more effectively meet their obligation in promoting EE.

- Research and testing be conducted on methods of implementation and evaluation which attempt to change attitudes and values.

---

*RECOMMENDATION #4. "Every public and private school and school district, and every public and private institution of higher learning, in the state appoint an environmental committee to study its curriculum, research, and administration, and make recommendations for change to meet future environmental and ecological requirements." Colorado: Options for the Future, Final Report of the Colorado Environmental Commission, March 1972.

VIII. Evaluation

INDIVIDUAL EE PROGRAMS AND THE MASTER PLAN ITSELF NEED TO BE ASSESSED FOR ACCOUNTABILITY

The effectiveness of the Master Planning effort in providing program guidance, in facilitating program coordination and cooperation, and in achieving the goals set for it---and the effectiveness of individual EE programs in achieving the goals set for them---will determine their accountability. This accountability can be assessed by:

- The measured effectiveness of guidance provided by the Master Plan document and the planning effort as determined by the number of EE programs undertaken and the extent to which they are in line with the Plan's goals and recommendations.
- The measured degree of Master Plan effectiveness in promoting coordination and cooperation as determined by the extent to which identified resources have been utilized and organizations have assumed specific roles and responsibilities for EE efforts.
- Measuring results of individual EE programs in terms of participant and operational achievement of program goals and objectives.

EE PROGRAM EVALUATION, A POSITIVE PROCESS

Program evaluation provides a means for participants to continuously improve their efforts.

- Information derived from any program evaluation should be fed back to both staff and participants for use in continuously improving their efforts rather than simply being reported to an outside authority.
- Means should be determined for providing positive support for program staff and participants in their attempts to improve their efforts.

EVERYONE INVOLVED IN AN EE PROGRAM SHOULD BE AN EVALUATOR

Evaluation and feedback of results is the responsibility of all people associated with any EE program---including program participants (target groups), and staff.

- Measurement and evaluation should occur through initial needs assessment and problem identification, in pre-assessing learners, and through enroute, terminal and long-range measurements of learner achievement and program performance.
- Program designers should establish specific evaluation objectives, criteria and techniques to assess both learner achievement and program results.
- Staff members should conduct program evaluations and make the results available to the learners as well as to each other.
- Participants themselves should evaluate program effectiveness by assessing their own performances, that of their peers and project staff, and sharing the information among all concerned.
- People not directly involved in the program should take measurements of learner achievement, staff and program performance and, again, the results should be shared with all program people as well as with others outside the program.
- Program staff, participants, and outside evaluators should be trained in evaluation techniques and in the process of informational feedback.

IX. Environmental Education Program Possibilities and Suggestions

A WIDE VARIETY OF EE PROGRAMS ARE POSSIBLE

The following program descriptions represent an overview of the types of EE efforts which should be considered for Colorado. Prior to the planning of any state-wide program, steps should be taken to make sure that such a program is not already being implemented by some other group or organization.*

It is intended that the specific nature of each program---its goals and objectives, methodology and target population---be determined by those who take responsibility for developing, implementing and evaluating them.

In the development of any of the following program possibilities, the content and methods used should consider the statement of EE Needs (Section IV), the nature of the target group, the EE Goals (Section VI), and the description of EE (Section VII).

o Develop and bring into operation an EE center or centers to:

- collect, catalog, and distribute environmental information
- provide library resources
- describe functions of and refer people to various environmental organizations and agencies
- maintain and publicize a speakers' bureau
- provide and/or refer people to EE specialists and consultants
- maintain a file on all EE projects being conducted throughout Colorado and the nation
- direct people to meetings, conferences, courses, hearings, and group activities pertaining to environmental matters
- conduct and/or develop guidelines for EE workshops
- provide EE instructional assistance and program guidance
- publish an EE newsletter
- assist in development of regional EE centers, high school ecology clubs, etc.
- maintain a file on EE funding sources and provide grant application assistance to interested groups

---

*In order to help eliminate duplication of efforts, the Master Plan Staff is currently compiling and will publish in the coming months a Resource Guide to serve as a source of information about people already carrying out some of the program ideas listed in this section and other EE activities.

- Conduct a television or radio project(s) which would involve viewers/listeners in the determination of program content and design and would make provision for follow-up projects and activities. For example:

  - The future of the Puget Sound region of Washington State was recently confronted head-on by residents of that area through the innovative use of television. Over 200 discussion groups, organized by volunteers, viewed and discussed a series of environmentally-related programs produced by a local TV station with assistance from local people. At the end of the project a mass meeting of all discussion groups was held during which various action programs were approved---and are now being implemented.

  - Develop a TV program which would have a wide audience appeal, e.g., adventure, comedy, mystery making EE a subtle but integral component of the production.

- Plan and conduct community-based EE projects, involving the adult and/or younger population. For example:

  - Provide a group of minority children with cameras to record what they see as the components of their environment.

  - Promote city-sponsored paper, can and bottle recycling efforts and/or promote the use of composting.

  - Develop a Nature Trail (possibly constructed by students) in which trained volunteers lead visitors in discussions of ecological relationships, renewable and non-renewable resources, etc.

  - Develop an innovative museum-type display or exhibit that is people-centered, e.g., the viewer is a participant in that he or she can manipulate, touch, hear, smell and otherwise physically interact with the presentation.

- Integrate direct, real-life learning experiences with traditional academic curricula. For example:

  - Students could conduct research and participate in local zoning hearings.

  - Students (including elementary) could devise an environmental awareness questionnaire; administer it to parents, neighbors, etc.; and tabulate and publish the results.

  - High school and junior high students could investigate local water sewage treatment facilities and publicize any deficiencies through student and local newspapers, in-class reports, etc.

- Students could work with teachers and community resource people in school site development.

o So as not to compartmentalize EE, develop multi-disciplinary curricula, instructional methods and teaching approaches. For example:

- A high school biology and political science course could investigate the extent of local water pollution, the causes of it, and alternative solutions.

- A team-taught high school course on environmental problems utilizing biology, history, social studies, and humanities teachers.

- An environmental "school book" and resource guide developed and written by students (as is being done by a group of high school students in Boulder).

- Development of video tape instructional programs for schools, colleges and junior colleges including general orientation courses, single discipline survey courses, and interdisciplinary courses.

o Develop and/or promote the use of environmental games and simulations. For example:

- Teacher and student workshops could be led by the students at the University of Colorado who are working in gaming theory and application.

- Schools and community groups could utilize simulations which have already been developed and into which local data can be plugged, such as Enviro County developed by the Cooperative Science Education Center in Oak Ridge, Tennessee.

o Develop prototype environmental study kits, audio-visual materials, etc. which can be replicated or duplicated inexpensively. For example:

- Instructions for making water, air, and soil pollution testing kits could be developed and sold to schools, etc., enabling them to purchase whatever materials are needed rather than having to pay inflated commercial prices for the total kit.

o Conduct a pilot pre-service preparation program for:

a. Elementary and secondary, college and university instructors and administrators. For example:

- Preparation programs might include the development of EE curricula, design methods instruction techniques, new learning environments (e.g., the design and use of new school sites), etc.

b. Professionals (other than educators) whose work is often environmentally related, e.g., the fields of engineering, law, economics, public administration, government, medicine, mass media, business, architecture, social work, etc. Such programs should prepare professionals to assume environmental responsibility for the decisions and policies they implement in their professional roles. For example:

- Pre-medicine students might be required to take course work dealing with the impact of all forms of environmental deterioration upon physical and mental health.

o Conduct a pilot in-service education program for:

a. Elementary and secondary, college and university instructors, administrators and teaching aides. For example:

- Conducting multi-disciplinary EE workshops for teachers.

- Conducting a teacher preparation workshop around the successful EE program or curricula experiences of a particular teacher or school.

b. Non-formal educational personnel, such as mentioned above in pre-service training, plus public officials and business and civic leaders. For example:

- A short-course geared specifically to the desires and needs of county commissioners or a city council.

- A workshop for mass media representatives to discuss the EE possibilities through the various media.

o Establish a demonstration K-12 school (such as now exists in Corvallis, Oregon) based on a new concept in which "Man in His Environment" would be the overall theme for the total school curricula; all disciplines and activities would be fused into the central environmental theme.

o Organize meetings among conflicting environmental interests in order that all sides of environmental issues can be brought into the open and means can be explored for compromising solutions. For example:

- Student environmental activists invited to Chamber of Commerce meetings.

- Meetings between west slope residents, and/or minority people, and Denver "environmentalists," etc.

o Make a feasibility study of establishing an Environmental News Service in Colorado. Such a service would collect and edit articles and by-lines on environmental problem areas, innovative educational programs and technological advances, and other news of environmental interest, and would send copy to all local and county newspapers throughout the state.

o Develop interdisciplinary teams within college and university faculties for the purpose of developing the new technology needed for long-range environmental impact analysis. This would include graduate study and research programs, faculty research, field experience, seminars, and similar activities.

o Develop evaluation and measurement techniques for EE programs. For example:

- Students, teachers and administrators participating in an EE program could, with the assistance of outside personnel, collectively measure the success of the program, share the resulting information, and thereby improve program effectiveness.

o Plan and carry out fund-raising efforts to support EE programs. For example:

- Determine the public and private agencies currently funding EE projects, ascertain other agencies who might be receptive to funding projects, and determine how to best approach these sources.

APPENDIX A

Needs Assessment Questionnaire

EE QUESTIONNAIRE HELPS DETERMINE MASTER PLAN
GOALS AND PROGRAM RECOMMENDATIONS

540 Needs Assessment Questionnaires were sent to members of the 10 Interest Committees in the metro Denver area, participants in 13 regional meetings held across the state, and others who have been involved in the development of the EE Master Plan for Colorado. More than 320 (60%) questionnaires were completed and returned to the Master Planning Staff. Following are the questions that were asked and the statistical analysis of the responses given:

o Question #1

A. Given a limited amount of money and material resources, which of the following do you think should receive first priority in EE efforts? (Check one.)

_____ Formal education; students, instructors, administrators, boards and commissions in public and private schools, colleges, etc.

_____ Non-formal education; the general public, elected officials professional and community-service groups.

B. Please indicate why you chose the item. (Check at least one and not more than two of the statements listed below.)

I chose this group because it is:

_____ most receptive

_____ most influential

_____ most likely of attaining immediate success

_____ most likely of attaining long range results

_____ more prone to take action

_____ other_____

Responses to Question 1 seem to indicate a clear split of preference between formal and non-formal education programs.

58.3% of the respondents chose non-formal education programs as their first priority, citing as a rationale the fact that this target group would be most influential and that efforts directed at this group would be most likely of attaining immediate success. Formal education was chosen by 41.7% of the respondents to receive first priority in EE efforts because of the potential for long range results and because they felt this target group would be most receptive to such efforts.

These responses seem to indicate that people have a clear perception of the attributes of formal and non-formal education programs. Taken as a total response, long and short range outcomes are given approximately equal priority, with short range change given a slight preference.

In Questions #2-A, #3, #4-A, & #5 below respondents were asked to place the statements in RANK ORDER by placing the number 1 in the blank space to the left of the item they felt should be of highest priority; the number 2 next to the item of second priority; etc.

o Question #2

A. Realizing that resources may be limited within the formal education system (students, instructors, school administrators, school boards and higher education commissions), the levels at which most EE efforts should be directed are: (Place in RANK ORDER.)

_____ Pre-school

_____ Elementary (Grades 1-6)

_____ Secondary (Grades 7-12)

_____ Colleges & universities

_____ Technical & vocational schools

_____ Continuing & adult education programs

B. In the above question why did you consider your #1 choice as being to some degree more important than the other possibilities? (CHECK at least one and not more than two of the statements listed below; DO NOT RANK ORDER.)

_____ most receptive

_____ most influence (impact)

_____ most likelihood of immediate success

_____ most likelihood for long range results

_____ more prone to take action

_____ other_____

Within the formal education system, respondents placed most overall importance on EE at the secondary level, (which received 21.9% of the votes using a weighted average*), with EE at the elementary level running a close second (receiving 19.9% of the votes). However, considering first place votes only, elementary education ranked somewhat higher, receiving 33.6% of the votes, compared to only 21.8% for secondary education. Reasons cited for the first place votes given to elementary and secondary education were that EE efforts at these levels would be most likely to achieve long range results (44.2% of the reasons cited) and that learners at these levels would be most receptive (31.1%).

Colleges and universities (18.4%) ranked slightly above continuing and adult education courses (17.2%) in overall importance (using a weighted average). However, considering first place votes only, continuing and adult education (with 19.3%) received slightly more than colleges and universities (with 18.6%). Respondents felt EE at the college level would have the most likelihood of attaining long range results (24% of the reasons cited) and that learners at this level would be more prone to take action (23%). Reasons cited for EE in continuing and adult education courses were that it would most likely result in immediate success (30.3% of the reasons cited) and that learners in this group potentially have the most influence (20.2%).

Given limited resources, an overwhelming majority of the people placed little overall importance on technological and vocational (13.9% on a weighted average) and pre-school (8.3%) level EE courses and even less importance on them as high priority considerations (technical and vocational courses received 2.2% of the first place votes and pre-school received 4.7%).

Taking all things into consideration, it can be said that, given limited resources, people place most importance on EE efforts at (in order of priority) the secondary, elementary, college and university, and continuing and adult education levels.

---

*A weighted average was calculated in order to take all the votes (for every rank position) received by each choice into consideration and, therefore, get a better idea how that choice ranked in overall importance, compared with each of the other choices. The following method was used to calculate weighted averages. Suppose 6 choices were to be placed in rank order. All first place votes a certain choice received were given the value of 6; second place votes a value of 5; third place, 4;...and sixth place votes a value of 1. Assume a choice received 20 first place votes; 10 second place votes; 3 third place votes; 0 fourth place votes; 1 fifth place vote; and 5 sixth place votes. The value assigned each vote was multiplied by the number of votes: 20 x 6, 10 x 5, 3 x 4, 0 x 3, 1 x 2, and 5 x 1. The products were added to obtain a sum. The same procedure was followed for each of the remaining 5 choices. The choice with the highest sum could therefore be considered most important overall.

o Question #3

What do you feel are the most effective ways of environmentally educating the general public? (Please number in RANK ORDER from 1-8.)

_____ Reading: newspapers, magazines, pamphlets, newsletters, books, etc.

_____ Watching television and listening to radio.

_____ Speakers, films, slide presentations, etc. concerning environmental problems.

_____ Public meetings and workshops to discuss environmental problems, EE, etc.

_____ Educational programs geared to specific groups (i.e. professional, civic, church, social groups and organizations).

_____ Outdoor education facilities in state and national parks and forests, on private lands, etc.

_____ Working with others to actively deal with environmental problems (such as speaking with county commissioners, writing letters to legislators, setting up recycling programs, encouraging local school boards to establish EE within the schools).

_____ Community EE centers and laboratories (where individuals becomes actively involved in the learning process through such possibilities as learning and practicing organic gardening, participating in environmentally-related games and simulations, etc.).

_____ Other

Question #3 asked the respondents to rank order 8 educational techniques or modes on the basis of their effectiveness in "environmentally educating the general public." The results were:

Mode	Ranking (Weighted average)
TV & Radio	1
Working with others to solve environmental problems	2
Educational programs geared to specific groups	3
Reading	4
Public Meetings to discuss environmental problems	5
Community EE centers and labs	6
Speakers, films, etc. conerning environ. problems	7
Outdoor ed. facilities	8

o Question #4 (cont.)

B. For the goal that you marked #1 (most important) in the above question, why did you consider that it was at least a little more important than the other choices? (CHECK at least one and not more than two of the statements listed below; DO NOT RANK ORDER.)

_____ most basic or fundamental

_____ most likelihood of immediate results

_____ most likely to be implemented

_____ most likely to result in change

_____ people would be most receptive to it

_____ best potential for lasting effects

_____ other_____

The respondents felt that changing attitudes and values, which received 32.1% of the first place votes, should be the top priority goal for EE efforts in either a formal or non-formal setting. It was felt that such change was most basic or fundamental (43.7% of the reasons cited) and that it had the best potential for long-lasting effects (38.5% of cited reasons). Ecological principles received 25.8% of the first place votes; however, in overall importance (using a weighted average), it received 22.4% over 21.3% for changing attitudes and values. It was chosen for the same reasons as changing attitudes.

Providing unbiased information was considered almost as important overall as the first two (receiving 19.2% on a weighted average); but with 16.9% it received only half as many first place votes as changing values and attitudes. This perhaps indicates that most people feel it is an important goal, but that it should not receive highest priority.

Learning experiences and information about activities alternated for 4th and 5th places. Learning experiences received 16.3% of the first place votes, compared to 8.9% for information about activities, but it received only 18.3% on a weighted average, while information about activities jumped to 18.5%. Reasons cited for the first place votes cast for learning experiences were that they would most likely result in change (25.7% of the reasons cited) and that they had the best potential for lasting effects. Many who placed information about activities in first place did so because they felt it would most likely result in change (26.2% of the reasons cited) and because people would be most receptive to it (21.4%).

To summarize, in a weighted ranking all five choices were within only 4 percentage points of one another; however, considering first place votes only, changing values comes out clearly ahead, ranking nearly 7 points ahead of the 2nd place choice and a good 23 points ahead of the last choice.

In first place votes, TV & radio came out the clear winner as the most effective way of environmentally educating the general public, with 46.8% of the vote. Working with others to solve environmental problems, with 17% of the first place votes, and community EE centers, with 11.2%, ran a slow second and third. Using a weighted average to indicate overall importance, TV & radio remained in first place, with 15.5% of the vote, and working with others (13.8%) retained second place. Community EE centers slipped to sixth place (11.2%) being overtaken by educational programs, (13.3%), reading (12.5%), and public meetings and workshops (11.9%).

o Question #4

A. The EE goals and aims in Colorado, in rank order, should be to:

_____ Teach ecological principles and relationships (to students and the general public.)

_____ Provide unbiased information on environmental problems.

_____ Change our attitudes and values (for example, materialistic life-styles, lack of respect for nature, etc.)

_____ Provide learning experiences through direct involvement in activities aimed at solving specific environmental problems (for example, measuring water pollution levels, campaigning for environmentally-concerned political candidates, gathering data for use in a zoning hearing, etc.).

_____ Provide information about activities which people can undertake to improve environmental conditions (for example, make people aware of environmentally-active groups and organizations, provide specific suggestions as to how individuals can live more ecologically-sound lives, inform the public about meetings, workshops, classes, etc. dealing with environmental problem areas).

o Question #5

To help us determine the relative importance of EE with respect to other approaches for dealing with environmental problems, please do the following: indicate below which of the following approaches you consider most necessary and ultimately most useful in dealing with environmental problems. (Please number in RANK ORDER.)

_____ Local and regional planning

_____ In-school and community-based EE programs

_____ Laws and regulations enacted and enforced

_____ Money made available for new pollution control technology and clean-up operations

_____ Other

Nearly half (47.3%) the respondents chose EE programs as being the most important approach for dealing with environmental problems. It was chosen over local and regional planning, with 24.4% of the first place votes; laws and regulations, with 20.1%; and money for new pollution control technology and clean-up operations, with 5.4%. Other approaches, which were written in, received 1.9% of the first place votes. Using a weighted average, the rank order was the same, but the percentages were much closer together; e.g., EE programs received only 28.8% compared with 26.6% for local and regional planning and 24.3% for laws and regulations. This seems to indicate that nearly equal overall importance is placed on these three approaches, but that EE programs are clearly the first priority and that concentrated effort should be placed on setting up such programs before efforts are placed on planning and legislation.

APPENDIX B

COLORADO ENVIRONMENTAL COMMISSION CALLS FOR "MASSIVE EDUCATIONAL EFFORT"

The final report of the Colorado Environmental Commission* cites education as the second environmental goal for the State; the eight goals from the report are listed below.

1. Institute, in all three branches of state government, those permanent legal, structural and financial arrangements required for planning, coordinating and enforcing the protection, preservation and enhancement of the quality of the environment.

2. Develop the massive educational effort and political consensus required for protecting, preserving and enhancing the quality of the environment.

3. Stabilize and plan the distribution of the future population of Colorado, with consideration for the ecological balance, present and future.

4. Achieve integration of state water, land use, environmental and population policies.

5. Create balanced transportation systems within the state.

6. Adopt the principle of recycling in resource use throughout the state.

7. Prevent the loss of the agricultural industry to the state.

8. Determine the wisest use of the energy resources of Colorado, from both a state and a national viewpoint.

*Colorado: Options for the Future, Final Report of the Colorado Environmental Commission, March 1972.